

## General

### Title

Adult trauma care: percentage of patients age 18 years and older with a primary injury diagnosis admitted to ICU from the ward.

### Source(s)

Guide to quality indicators in adult trauma care. Version 3. Calgary (AB): Quality of Trauma in Adult Care, University of Calgary; 2013 Jan 29. 129 p. [111 references]

## Measure Domain

### Primary Measure Domain

Related Health Care Delivery Measures: Use of Services

### Secondary Measure Domain

Does not apply to this measure

## Brief Abstract

### Description

This measure is used to assess the percentage of patients age 18 years and older with a primary injury diagnosis admitted to intensive care unit (ICU) from the ward (per 100 patients).

### Rationale

Each year, injuries affect 700 million people worldwide and result in more than five million deaths. In many countries, injuries are the leading cause of death among those under the age of 45 years. The human and societal burden is even greater with many survivors never returning to school, work or their "regular" lives.

Health care services provide patients with treatment for what is a major cause of morbidity and death. Yet medical errors and substandard care threaten trauma care. Half of all patients with major traumatic injuries do not receive recommended care, medical errors are common in critically ill trauma patients and preventable trauma deaths in hospital are widely reported. The World Health Organization (WHO),

professional trauma organizations (e.g., American College of Surgeons [ACS], Trauma Association of Canada and Royal Australasian College of Surgeons) and accreditation bodies have promoted efforts to improve the quality of care delivered to injured patients. However, before the quality of injury care can be improved, it needs to be measured using reliable and valid measures of health care quality.

These indicators can be used to assess patient safety, and to evaluate and improve quality of care by incorporating these measures into local, regional or national quality improvement efforts. Implementing a consistent approach to measurement (same indicators, same definitions, same data elements, same reporting format) would provide institutions with reliable performance data that is necessary for surveillance (e.g., tertiary survey completion), to track local problems (e.g., adverse events – specifically missed injuries), evaluate the effects of interventions or program changes (e.g., tertiary survey protocol) and provide comparisons across centers (e.g., benchmarking adverse events using programs such as the ACS's Trauma Quality Improvement Program). Well-designed, carefully evaluated and appropriately implemented quality indicators (QIs) may be essential tools for guiding efforts to improve health and healthcare.

The indicator is intended to monitor unplanned admissions to the intensive care unit (ICU).

## Evidence for Rationale

Guide to quality indicators in adult trauma care. Version 3. Calgary (AB): Quality of Trauma in Adult Care, University of Calgary; 2013 Jan 29. 129 p. [111 references]

## Primary Health Components

Trauma care; injury; unplanned admission; intensive care unit (ICU)

## Denominator Description

All patients age 18 years and older with a primary injury diagnosis admitted to a hospital ward

## Numerator Description

All patients age 18 years and older with a primary injury diagnosis admitted to intensive care unit (ICU) from the ward (see the related "Numerator Inclusions/Exclusions")

## Evidence Supporting the Measure

### Type of Evidence Supporting the Criterion of Quality for the Measure

A formal consensus procedure, involving experts in relevant clinical, methodological, public health and organizational sciences

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

### Additional Information Supporting Need for the Measure

Chadbunchachai et al. (2003) demonstrated that implementation of a trauma quality improvement program that included the quality indicator was associated with reduced hospital mortality.

# Evidence for Additional Information Supporting Need for the Measure

Chadbunchachai W, Saranrittichai S, Sriwiwat S, Chumsri J, Kulleab S, Jaikwang P. Study on performance following Key Performance Indicators for trauma care: Khon Kaen Hospital 2000. J Med Assoc Thai. 2003 Jan;86(1):1-7. [PubMed](#)

## Extent of Measure Testing

Using a modification of the RAND/University of California, Los Angeles (UCLA) Appropriateness Methodology, a panel of 19 injury and quality of care experts serially rated and revised quality indicators identified from a systematic review of the literature and international audit of trauma center quality improvement practices. The quality indicators developed by the panel were sent to 133 verified trauma centers in the United States, Canada, Australia, and New Zealand for evaluation.

A total of 84 quality indicators were rated and revised by the expert panel over 4 rounds of review producing 31 quality indicators of structure (n=5), process (n=21), and outcome (n=5), designed to assess the safety (n=8), effectiveness (n=17), efficiency (n=6), timeliness (n=16), equity (n=2), and patient-centeredness (n=1) of injury care spanning prehospital (n=8), hospital (n=19), and posthospital (n=2) care and secondary injury prevention (n=1). A total of 101 trauma centers (76% response rate) rated the indicators (1=strong disagreement, 9=strong agreement) as targeting important health improvements (median score 9, interquartile range [IQR] 8 to 9), easy to interpret (median score 8, IQR 8 to 9), easy to implement (median score 8, IQR 7 to 8), and globally good indicators (median score 8, IQR 8 to 9).

Thirty-one evidence-informed quality indicators of adult injury care were developed, shown to have content validity, and can be used as performance measures to guide injury care quality improvement practices.

Trauma centers rated the indicator "percentage of patients age 18 years and older with a primary injury diagnosis admitted to intensive care unit (ICU) from the ward" as targeting important health improvements (median score 8, IQR 7 to 9), easy to interpret (median score 8, IQR 7 to 9), easy to implement (median score 8, IQR 7 to 9), and globally a good indicator (median score 8, IQR 7 to 9).

## Evidence for Extent of Measure Testing

Santana MJ, Stelfox HT, Trauma Quality Indicator Consensus Panel. Development and evaluation of evidence-informed quality indicators for adult injury care. Ann Surg. 2014 Jan;259(1):186-92. [35 references] [PubMed](#)

## State of Use of the Measure

### State of Use

Current routine use

### Current Use

not defined yet

## Application of the Measure in its Current Use

## Measurement Setting

Hospital Inpatient

Intensive Care Units

## Professionals Involved in Delivery of Health Services

not defined yet

## Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

## Statement of Acceptable Minimum Sample Size

Does not apply to this measure

## Target Population Age

Age greater than or equal to 18 years

## Target Population Gender

Either male or female

## National Strategy for Quality Improvement in Health Care

### National Quality Strategy Priority

## Institute of Medicine (IOM) National Health Care Quality Report Categories

### IOM Care Need

Not within an IOM Care Need

### IOM Domain

Not within an IOM Domain

## Data Collection for the Measure

### Case Finding Period

## Case Finding Period

Unspecified

## Denominator Sampling Frame

Patients associated with provider

## Denominator (Index) Event or Characteristic

Clinical Condition

Institutionalization

Patient/Individual (Consumer) Characteristic

## Denominator Time Window

not defined yet

## Denominator Inclusions/Exclusions

Inclusions

All patients age 18 years and older with a primary injury diagnosis admitted to a hospital ward

Exclusions

Unspecified

## Exclusions/Exceptions

not defined yet

## Numerator Inclusions/Exclusions

Inclusions

All patients age 18 years and older with a primary injury diagnosis admitted to intensive care unit (ICU) from the ward

Note: A small number of injured patients may have "planned" admissions from the ward to the ICU. However, this number is likely to be small compared to the number of patients with transfers from the ward to the ICU that are "unplanned." To make the indicator easy to implement, a small amount of misclassification will likely need to be tolerated.

Exclusions

Excludes patients admitted to ICU from the emergency department (ED), operating room or post-operative care unit

## Numerator Search Strategy

Institutionalization

## Data Source

Administrative clinical data

Registry data

## Type of Health State

Proxy for Health State

## Instruments Used and/or Associated with the Measure

Unspecified

## Computation of the Measure

### Measure Specifies Disaggregation

Does not apply to this measure

### Scoring

Rate/Proportion

### Interpretation of Score

Does not apply to this measure (i.e., there is no pre-defined preference for the measure score)

### Allowance for Patient or Population Factors

not defined yet

### Description of Allowance for Patient or Population Factors

Risk Adjustment: Age, sex, pre-existing conditions and a validated Injury Severity Score (ISS) (e.g., abbreviated ISS [AIS] or International Classification of Diseases-based ISS [ICISS])

How to calculate Risk-adjusted Unplanned Intensive Care Unit (ICU) Admission:

$$\text{Risk-adjusted Unplanned ICU Admission} = [\text{Observed Unplanned ICU Admission Rate-adjusted Unplanned ICU Admission Rate (X100)}] \times \text{Overall Unplanned ICU Admission Rate in the standard population}$$

Alternatively Risk-adjusted Unplanned ICU Admission can be calculated directly from parameter estimates from a multivariable risk-adjusted model examining data from individual institutions or from multiple institutions.

Note: Standard population refers to a population of institutions under evaluation (e.g., institutions contributing data to a national trauma registry or centrally collected administrative data bank).

### Standard of Comparison

not defined yet

# Identifying Information

## Original Title

Unplanned intensive care unit admission.

## Measure Collection Name

Quality Indicators in Adult Trauma Care

## Measure Set Name

Hospital Indicators

## Submitter

Quality of Trauma in Adult Care (QTAC) Team, University of Calgary - Academic Institution

## Developer

Quality of Trauma in Adult Care (QTAC) Team, University of Calgary - Academic Institution

## Funding Source(s)

The project was supported by a Partnerships in Health System Improvement Grant (PHE-91429) from the Canadian Institutes of Health Research and Alberta Innovates Health Solutions. Funding sources had no role in the design, conduct, or reporting of this study.

## Composition of the Group that Developed the Measure

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### Expert Panel

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## Financial Disclosures/Other Potential Conflicts of Interest

The project was supported by a Partnerships in Health System Improvement Grant (PHE-91429) from the Canadian Institutes of Health Research and Alberta Innovates Health Solutions. Dr Stelfox was supported by a New Investigator Award from the Canadian Institutes of Health Research and a Population Health Investigator Award from Alberta Innovates Health Solutions. Funding sources had no role in the design, conduct, or reporting of this study. The authors declare no conflicts of interest.

## Adaptation

This measure was not adapted from another source.

## Date of Most Current Version in NQMC

2013 Jan

## Measure Maintenance

Unspecified

## Date of Next Anticipated Revision

Unspecified

## Measure Status

This is the current release of the measure.

## Measure Availability



Source available from the [Quality of Trauma in Adult Care \(QTAC\) Web site](#) .

This work is also available from the [Annals of Surgery Web site](#) : Santana MJ, Stelfox HT, Trauma Quality Indicator Consensus Panel. Development and evaluation of evidence-informed quality indicators for adult injury care. Ann Surg. 2014 Jan;259(1):186-92.

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## NQMC Status

This NQMC summary was completed by ECRI Institute on May 11, 2015. The information was verified by the measure developer on July 13, 2015.

## Copyright Statement

This NQMC summary is based on the original measure, which is subject to the measure developer's copyright restrictions.

The individual measures from the "Guide to Quality Indicators in Adult Trauma Care," are available from the [Quality of Trauma in Adult Care \(QTAC\) Web site](#) .

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## Production

### Source(s)

Guide to quality indicators in adult trauma care. Version 3. Calgary (AB): Quality of Trauma in Adult Care, University of Calgary; 2013 Jan 29. 129 p. [111 references]

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